IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | |
|---|---|---|
| **In Re Application of** | ) | **METHOD AND APPARATUS FOR** |
| | ) For: | **EFFICIENT PAGING AND** |
| **An Mei CHEN and** | ) | **REGISTRATION IN A WIRELESS** |
| **Eric C. ROSEN** | ) | **COMMUNICATIONS NETWORK** |
| | ) | |
| **Serial No. 10/807,636** | ) **Conf. No.** | **4030** |
| | ) | |
| **Filed: March 23, 2004** | ) **Group No.** | **2617** |

# APPELLANTS' BRIEF

MS Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

This is an appeal from the final Office Action dated May 1, 2008 (FR), rejecting claims 1-24. A Notice of Appeal was filed on August 1, 2008.

## (1) REAL PARTY IN INTEREST

The real party in interest is QUALCOMM Incorporated, the assignee of the entire interest.

## (2) RELATED APPEALS AND INTERFERENCES

Appellants are not aware of any related appeals, interferences or judicial proceedings.

## (3) STATUS OF CLAIMS

The status of the claims is as follows:

Claims rejected: Claims 1-24

Claims allowed: none

Claims withdrawn: none

Claims objected to: none

Claims cancelled: none

Claims appealed: Claims 1-24

## (4) STATUS OF AMENDMENTS

No amendment to the claims has been submitted since the Final Office Action dated May 1, 2008.

## (5) SUMMARY OF CLAIMED SUBJECT MATTER

The following summary is for the purpose of complying with the provisions of 37 CFR 41.37(c)(1)(v). The entire disclosure should be reviewed to obtain a complete understanding of the claim language. Citations to the specification is by paragraph number, e.g., "[0001]" and citations to the figures is by figure number, e.g., "[Fig. 1, reference numeral 100]."

| Claim 1 | |
|---|---|
| Claim Language | Citation to specification and drawings |
| 1. A method for paging a target mobile station (MS), the method comprising: | Abstract, Paragraphs [0058], [0066]-[0069], [0074]; Fig. 13, reference numerals 1304, for example |
| receiving information destined for the target MS; | Paragraphs [0007], [0046], [0047], [0055], [0056], [0068], [0069]; Fig. 13, reference numeral 1306, for example |
| paging the target MS at a paging area that is centered at a cell, in which the target MS last registered, and expands by a predefined number of cells around the cell; and | Abstract; Paragraphs [0007], [0040], [0049], [0055], [0056], [0064], [0065], [0067]; Fig. 11, reference numeral 1102; Fig. 13, reference numeral 1306, for example |
| receiving registration from the MS when a number of cells identified in a first list is equal to a predetermined limit and the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list. | Paragraphs [0006], [0035], [0051], [0057], [0062]- [0065], [0067], [0068], [0070]-[0072]; Figure 11, reference numerals 1106, 1108, 1110, for example |

| Claim 7 | |
|---|---|
| Claim Language | Citation to specification and drawings |
| 13. A computer-readable medium comprising at least one instruction, which, when executed by a machine, cause the machine to perform operations for paging a target mobile station (MS), the instruction comprising: | Abstract; Paragraphs [0038], [0058], [0066]-[0069], [0074]; Fig. 13, reference numerals 1304, for example |
| a set of the instructions to receive information destined for the target MS; | Paragraphs [0007], [0046], [0047], [0055], [0056], [0068], [0069]; Fig. 13, reference numeral 1306, for example |
| a set of the instructions to page the target MS at a paging area that is centered at a cell, in which the target MS last registered, and expands by a predefined number of cells around the cell; and | Abstract; Paragraphs [0007], [0040], [0049], [0055], [0056], [0064], [0065], [0067]; Fig. 11, reference numeral 1102; Fig. 13, reference numeral 1306, for example |
| a set of instructions to receive registration from the MS when a number of cells identified in a first list is equal to a predetermined limit and the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list. | Paragraphs [0006], [0035], [0051],[0057], [0062]- [0065], [0067], [0068], [0070]-[0072]; Figure 11, reference numerals 1106, 1108, 1110 |

| Claim 13 | |
|---|---|
| Claim Language | Citation to specification and drawings for structure corresponding to the function |
| 13. An apparatus for paging a target mobile station (MS), comprising: | Abstract, Paragraphs [0002], [0058], [0066]-[0069], [0074]; Fig. 13, reference numerals 1304, for example |
| means for receiving information destined for the target MS; | Paragraphs [0007], [0046], [0047], [0055], [0056], [0068], [0069]; Fig. 13, reference numeral 1306, for example |
| means for paging the target MS at a paging area that is centered at a cell, in which the target MS last registered, and expands by a predefined number of cells around the cell; and | Abstract; Paragraphs [0007], [0040], [0049], [0055], [0056], [0064], [0065], [0067], Fig. 11, reference numeral 1102; Fig. 13, reference numeral 1306, for example |
| means for receiving registration from the MS when a number of cells identified in a first list is equal to a predetermined limit and the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list. | Paragraphs [0006], [0035], [0051],[0057], [0062]- [0065], [0067], [0068], [0070]-[0072]; Figure 11, reference numerals 1106, 1108, 1110, for example |

| Claim 19 | |
|---|---|
| Claim Language | Citation to specification and drawings |
| 19. A base station controller (BSC) for paging a target mobile station (MS), comprising: | Paragraphs [0025], [0026], [0033], [0046]-[0058], [0068]; Fig. 2, reference numeral 230, 270, for example |
| a receiver operable to receive information from a target MS; | Paragraphs [0008], [0035]; Fig. 2, reference numeral 222, for example; Figure 4, reference numeral 406, for example |
| a transmitter operable to transmit information to the target MS; and | Paragraphs [0008]; Figure 4, reference numeral 408, for example |
| a processor operable to: | Paragraphs [0008]; Figure 4, reference numeral 414, for example |
| receive information destined for the target MS; | Paragraphs [0007], [0046], [0047], [0055], [0056], [0068], [0069]; Fig. 13, reference numeral 1306, for example |
| page the target MS at a paging area that is centered at a cell, in which the target MS last registered, and expands by a predefined number of cells around the cell; and | Abstract; Paragraphs [0007], [0040], [0049], [0055], [0056], [0064], [0065], [0067], [0068]; Fig. 11, reference numeral 1102; Fig. 13, reference numeral 1306, for example |
| receive registration from the MS when a number of cells identified in a first list is equal to a predetermined limit and the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list. | Paragraphs [0006], [0035], [0051],[0057], [0062]- [0065], [0067], [0068], [0070]-[0072]; Figure 11, reference numerals 1106, 1108, 1110, for example |

## (6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- Claims 1-4, 7-10, 13-16, and 19-22 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Kallin et al. (U.S. Patent No. 6,058,308) ("Kallin") in view of Ho et al. (U.S. Patent No. 5,943,621) ("Ho"), and further in view of Funato, et al. (U.S. Publication No. 2003/0143999) ("Funato").
- Claims 5, 6, 11, 12, 17, 18, 23, and 24 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Kallin, Ho, Funato and further in view of Papadimitriou et al. (U.S. Publication No. 2002/0187793) ("Papadimitriou").

## (7) ARGUMENT

**Rejection of claims 1-4, 7-10, 13-16, and 19-22 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Kallin in view of Ho and further in view of Funato**

Prior to discussing the merits of the rejections, the Board's attention is directed to the ever-shifting explanation of the rejection by the Examiner. In response to the first Office action, Appellants requested the Examiner clarify the factual basis of the obviousness rejections. In response the Examiner's Final Rejection provided a new "motivation" for combining the references based upon the purported need to maintain a movement log and provide for billing and forwarding IP data in a network. FR, pages 4-5. Appellants addressed this new theory of the rejection in the response filed under 37 CFR § 1. 116 only to be greeted by yet another new theory of the rejection in the Advisory Action, In proposing the third theory of the rejection, the Examiner did not state he was withdrawing the second theory of the rejection as explained in the Final Rejection. Accordingly, Appellants will address both theories in this Appeal Brief and maintain its traversal.

### i. Legal standards

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See *In re Fine,* 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). These showings by the Examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole. See *id.*; *In re Hedges*, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and *In re Rinehart*, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

A claim is obvious only when the subject matter of the claim as a whole would have been obvious to a person having ordinary skill in the art. 35 U.S.C. § 103(a). As set forth in *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007):

> [A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.

The Federal Circuit in *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008), confirmed that "a flexible TSM test remains the primary guarantor against a non-statutory hindsight analysis such as occurred in this case (emphasis added)." According to the court, "[t]he TSM test, flexibly applied, merely assures that the obviousness test proceeds on the basis of evidence — teachings, suggestions (a tellingly broad term), or motivations (an

equally broad term) — that arise before the time of invention as the statute requires (emphasis added)." *Id.*

**ii. Claim construction**

In construing claim limitations it must be kept in mind that "as an initial matter, the PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997).

The claims under review are directed to, inter alia, a method, computer-readable medium, apparatus, or base station controller for receiving information destined for the target mobile station, paging a target mobile station in a paging area that is centered at a cell, and receiving registration from the mobile station. Registration is received from a mobile station (MS) when a number of cells in a first list is equal to a predetermined number. As part of the registration, the MS will move the cells identified in the first list, other than a cell in which the MS last registered, to a second list. Specification, [0064].

**iii. Analysis**

**a. Separate argument for independent claim 1**

Claim 1 is directed to a method for paging a target mobile station. The method comprises receiving information destined for the target mobile station and paging the target mobile station at a paging area that is centered at a cell in which the mobile station last registered. The paging area expands by a predefined number of cells around the cell. The method further comprises

receiving registration from the mobile station when the number of cells identified in a first list is equal to a predetermined limit. The mobile station moves cells identified in the first list, other than the cell in which the mobile station is last registered, to a second list.

A claim is obvious only when the subject matter of that claim as a whole would have been obvious to a person having ordinary skill in the art. 35 U.S.C. §103(a). Here, claim 1 includes the feature that the target mobile station (MS), after registering when a number of cells identified in a first list is equal to a predetermined limit, move the cells identified in the first list, other than a cell in which the MS last registered, to a second list. The Final Rejection dated May 1, 2008 cites references that do not teach or suggest this aspect of the claimed subject matter. In attempting to account for this missing claim limitation, the Examiner stated in the "Response To Arguments" section of the Final Rejection:

> In the combination of Kallin, Ho, and Funato, the cell for which the mobile registers with is maintained, as taught by Ho, and the removed cell IDs are moved into a previous location table, as taught by Funato, therefore teaching the aforementioned limitations.

FR, page 6. The Examiner's position is in error as it lacks factual support in the three applied references.

Kallin describes a system and method for adaptively selecting a paging area in which to page a mobile device. Kallin indicates that the last cell where each mobile terminal 18 was located is stored in storage element 72. See *Id*, column 9, lines11-15 and Fig. 2. The adaptive method of Kallin involves the use of paging area selector 92, granularity selector 72 and the records stored at storage element 72 of the "cell in which the mobile terminal to be paged was last-accessed by such mobile terminal." See *Id*., column 10, lines 50-54. Storage element 72 of

Kallin is part of the mobile switching center of that system. *Id.*, column 6, lines 27-31. Kallin summarizes its paging method as follows:

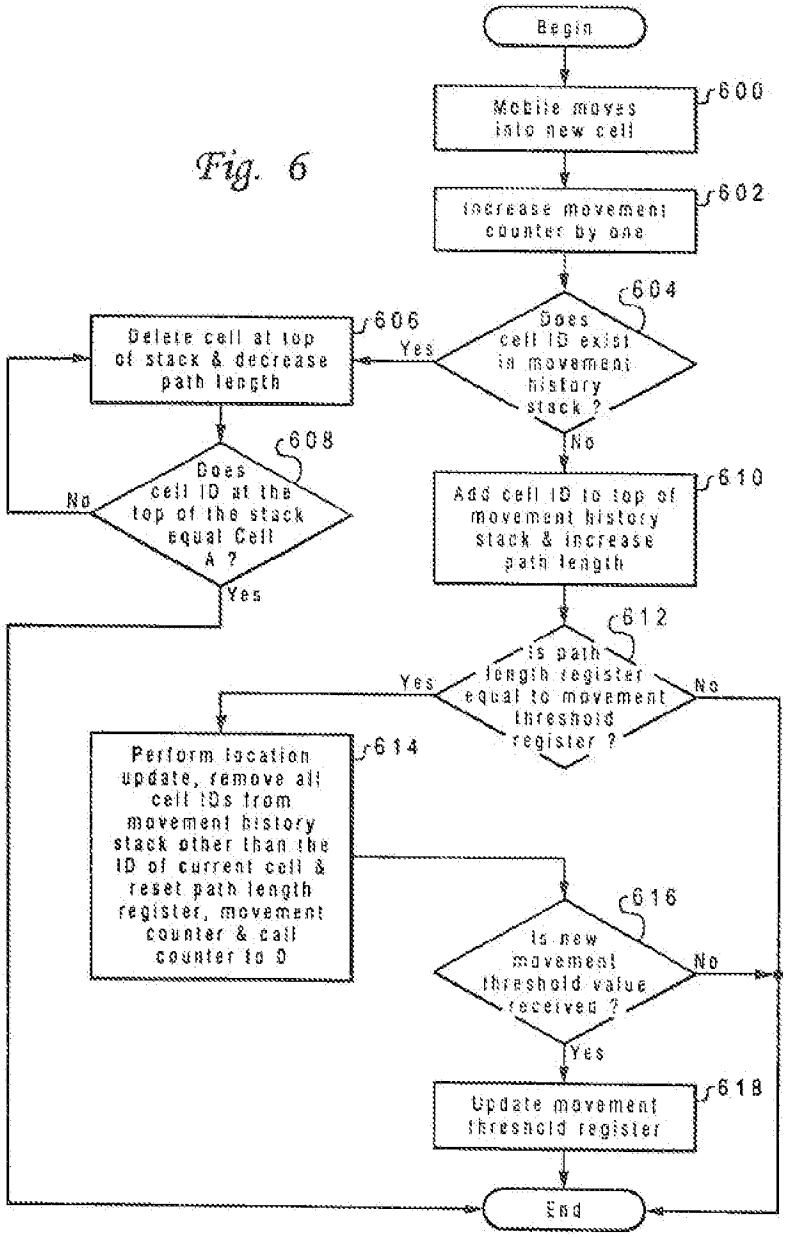
> Information indicative of the position at which the mobile terminal was located when the mobile last accessed a base station of the network infrastructure of the communication system is maintained in a record. When the mobile terminal is later to be paged, such record is utilized to select the paging area throughout which the page is to be broadcast. The paging area is selected to be proximate to the position, of which the information indicative thereof is maintained in the record. A selected number of pages is transmitted throughout the paging area when the mobile terminal is to be paged. If no acknowledgment to the page is detected by the network infrastructure, the paging area is adaptively altered, e.g., expanded. A new paging area is selected to include, e.g., the area proximate to the position from which the mobile terminal last accessed a base station together with an area surrounding the area of such proximity. Pages are broadcast throughout such expanded area. Thereby, the paging area is adaptively selected, all the while, responsive to the information stored in the record.

*Id.*, column 4, lines 13-31.

Ho describes a system and method of tracking mobile stations where the path of travel of the mobile station is monitored for the presence of loops. The path of the mobile station is tracked at the mobile station. *Id.*, Abstract.; Figures 3 and 5. When identified, a loop is removed from the path. The length of the path is compared with a threshold value and if the length is greater than or equal to the threshold value, the mobile station performs a location update at that time. *Id.*, column 2, line 63-column 3, line7. The threshold value in Ho is adaptively determined using a movement counter (MC) and call counter (CC) *Id.*, column 5, line 53- column 6, line 14. Cell IDs are used in Ho as described in column 6, line 49-column 7, line 26, in that, upon a location update by the mobile station 300, "all cell IDs are removed from the movement history

register except for the cell ID of the current cell." See also column 5, lines 5-20. Thus, Ho describes removing all cell IDs but for the current cell ID and does not describe moving cells identified in a first list, other than a cell in which the mobile station last registered to a second list. The loop removal technique described in Ho is illustrated in Figure 6 therefrom as follows:

*Fig. 6*



As seen, the activity occurs at the mobile station and new movement threshold value is received from the mobile switching center (MSC)..

When Kallin and Ho are viewed together, it is seen that Kallin describes an adaptive technology for paging mobile telecommunication devices while Ho describes an adaptive technology for tracking mobile telecommunication devices. Kallin takes advantage of the "probability that the mobile terminal is located at a position at which the mobile terminal was previously positioned when last-accessing the cellular network." *Id.*, col. 8, lines 35-41. Thus, the adaptive technology of Kallin needs only to "maintain a record indicative of the cell in which a mobile terminal was located when last-accessing the cellular network. *Id.*, column 8, lines 42-46. Ho, on the other hand, describes an "improved location scheme," *Id.*, column 8, lines 36-49, where the cell location of a mobile telecommunication device is reported only when a threshold value is reached and then is based upon a loop removal technique that includes multiple previous locations of the device. The scheme of Kallin occurs at the MSC while the scheme of Ho occurs at the mobile station.

The Examiner asserted that it would have been obvious to modify Kallin using Ho to "limit the number of stored cell IDs as a mobile moves through a network, as taught by Ho, in order to significantly reduce unnecessary location updates occurring in known movement-based schemes and reduce signaling overhead due to location management." FR, page 4. Missing from the Examiner's analysis is that Kallin adaptively optimizes paging resources based upon knowledge of the last reported cell location of a mobile telecommunication device. It does not appear that Kallin stores any cell IDs except for the cell where the mobile device last accessed the network. See, e.g., Kallin, column 9, lines11-15 ("an indication of the cell in which each mobile terminal was located when last-accessing the cellular network is thereby stored in the

storage element 72"). Thus, there does not appear to be a storage "problem" in Kallin,as asserted by the Examiner, that needs to be addressed.

Furthermore, Ho does not report the current location of a mobile telecommunication device in real time, but rather stores that information at the mobile station until a threshold value is reached and then removes cell locations as part of its loop removing process. Thus, the two references are working against each other and not combinable. When the prior art teaches away from a combination, that combination is more likely to have been nonobvious. *See KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1739-40 (2007).

Assuming arguendo that Kallin and Ho are properly combined, a point not conceded, they do not describe moving cells identified in a first list, other than a cell in which the mobile station last registered to a second list. The Examiner relies upon Funato for this aspect of the claimed subject matter. Funato describes a system and method for distributed dynamic paging where paging areas reconfigure themselves according to changes in movement of mobile hosts. *Id.*, Abstract. The Examiner relies upon Funato as teaching "moving the cells identified in a first list [CLT] other than cell in which the MS last registered, to a second list [PLT]," citing Funato, pages 5-6, paragraph [0088]. FR, page 4. However, the cited portion of Funato does not support the Examiner's fact finding.

The relied upon portion of Funato reads:

> [0088] FIG. 20 is an operational block diagram of the host reporter agent (HRA) 908 in a MH 902 (FIG. 9). The HRA includes a reporter process (REPF) 2002, and a previous location table (PLT) 2004 and a current location table (CLT) 2006. As the MH travels, the REPF 2002 updates the both PLT 2004 and CLT 2006 and registers the MH with a new area. The reporter process 2002 reports paging area movement to the current paging

> area clustering agent. As is indicated in FIG. 20, the PLT 2004 stores the paging identifier (PID) and the network access identifier (NAI) for the previous paging area clustering agent. Similarly, the CLT 2006 stores the paging identifier (PID) and the network access identifier (NAI) for the current paging area clustering agent. When the MH moves to another paging area, the reporter process 2002 moves the current location table 2006 information to the previous location table 2004.

As seen, upon registration in a new paging area, the MH (MS of the present claims) of Funato moves the current location table [CLT] (first list of the present claims) to the previous location table [PLT] (second list of the present claims). However, there is no disclosure in the relied upon passage of Funato that the cell in which the MH last registered is retained in the CLT as stated in the present claims. Rather, the last registered cell--the CLT of Funato--is moved to the PLT. Thus, the references do not teach or suggest the subject matter of claim 1 as a whole as required. 35 U.S.C. § 103(a).

The Examiner "clarified" in the Final Rejection how Funato allegedly teaches the claim limitation the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list. *Id.*, page 6. Tellingly, in so doing, the Examiner implicitly admitted that Funato does not teach this limitation, stating "[i]n the combination of Kallin, Ho, and Funato, the cell for which the mobile registers with is maintained as taught by Ho, and the removed cell IDs are moved into a previous location table, as taught by Funato, therefore teaching the aforementioned limitations." FR, page 6. In postulating this new theory of the rejection, the Examiner explained it would have allegedly been obvious to "modify the combination of Kallin and Ho to include moving the cells removed from the movement history stack to a second list, as taught by Funato, in order to maintain a movement history log and further distinguish between an active cell and a previously visited cell." FR, page 4. The

Examiner further explained that maintaining such a movement history log, purportedly in accordance with Funato, will define a "minimum paging area…that takes consideration of a mobile station." *Id.* The Examiner concluded, "it is obvious to a skilled artisan that a movement history log can be utilized by the network for functions such as billing or for forwarding data in an IP network." *Id.*

The Examiner's "movement history log" theory is blatant hindsight. None of the applied references are concerned with billing. Nor has the Examiner explained where any of the references describe as part of their respective inventions concern regarding forwarding data in an IP network. The strained nature of the Examiner's explanation of the proposed combination of references in the Final Rejection alone conveys the hindsight nature of the rejection. The Examiner first proposes to modify Kallin on the basis of Ho, which as explained above is not suggested by Kallin and Ho, then proposes to modify the modified version of Kallin based upon Ho by Funato. Since none of the three references teach or suggest the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list as featured in the present claims, the Examiner invents a motivation based upon a movement history to be used for purposes not taught or suggested by the three references.

Furthermore in reviewing the Examiner's proposed combination of the three references, it should be kept in mind that that "[all] of the disclosures in a reference must be evaluated for what they fairly teach one of ordinary skill in the art." *In re Boe,* 355 F.2d 961, 965, (CCPA 1966). Here, while each of Kallin, Ho, Funato describe paging schemes in wireless telecommunication networks, they each describe distinct systems and methods. The Examiner has surgically extracted from each reference only so much as he believes is needed to arrive at the subject matter of claim 1. The Examiner then proposes to combine the surgically extracted

elements to purportedly arrive at the claimed subject matter. This is further evidence of the hindsight nature of the rejection.

Viewing Kallin, Ho, and Funato together without knowledge of the present disclosure and claims as one must in making an obviousness determination, it is readily seen there is no reason to combine the references as proposed by the Examiner. The Examiner cites *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). FR, page 7. However, as explained in that case, it is improper for the Examiner to rely upon an applicant's disclosure and claims in formulating an obviousness rejection. Here, the so-called motivation relied upon by the Examiner finds no factual support in the references. Thus, the only apparent basis for combining the prior art disclosures is the present Applicants' disclosure and claims. This amounts to impermissible hindsight.

As mentioned above, the Examiner set forth a new theory of the rejection in the Advisory Action mailed July 29, 2008 (AA) stating:

> With respect to the combination of Kallin and Ho, Kallin pertains to adaptively selecting a paging area to page a mobile terminal wherein a base station or the network maintains a record of the last base station accessed by the mobile terminal. Ho pertains to a mobile terminal that maintains a movement history by recording cell ID of visited cells in a movement history stack. When a movement threshold is reached, the mobile terminal performs a location update and removes all the cell IDS in the movement history stack except for the current cell. The Examiner views the combination of Kallin and Ho as the mobile terminal of Ho operating in the network of Kallin. In Kallin, each base station identity for which the mobile terminal accesses is recorded for future paging/location purposes. In Ho, the mobile terminal does not perform a location update unless a movement threshold is reached. Thus if Kallin records the base station or cell ID when the mobile station of Ho performs a location update when the movement threshold is

> reached, the result would be the reduction of necessary location updates, which in turn reduces network signaling and increases network resources and efficiency.

*Id.*, page 2. However, it is not clear under this new theory how Kallin and Ho are to be combined and how this new theory is factually supported by the references.

The Examiner's new theory of the case does not take into account that the mobile terminal record storage element 72 of Kallin interacts with other components of the MSC, e.g., paging area selector 98 and granularity selector 82. The paging method and system of Kallin are based upon the simple knowledge of the last cell the mobile terminal accessed. *Id.*, specification, column 9, lines 11-15. Using that information, Kallin uses the other components of the MSC to adaptively determine the size of the paging area. *Id.*, column 9, line 16-column 11, line 37. Ho also describes an adaptive paging system and method based upon knowledge of a reported location of a mobile station where the location is reported only after a threshold level has been reached and so-called loops have been removed.. See, *id.*, specification, column 5, lines 21-35. The paging method of Ho is illustrated in Figure 7 as follows:

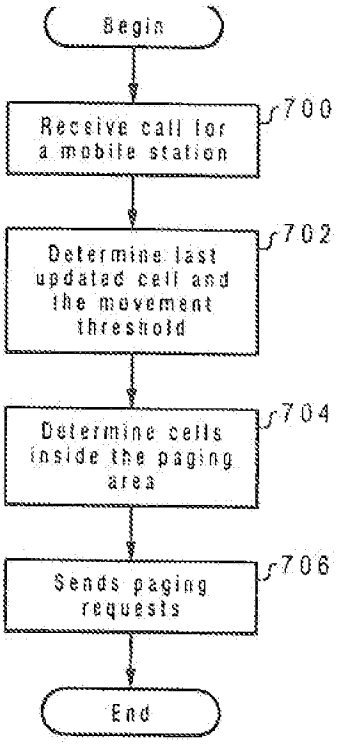



*Fig. 7*

The adaptive paging method of Ho is distinct from that of Kallin. Ho does not report the position of the mobile station in real time. Rather, Ho only reports the position of the mobile station after a threshold value is reached and after so-called loops have been removed.. The Examiner has not explained how the use of the Ho handset in the system of Kallin would be suggested by the references. The Kallin paging system relies upon knowledge of the last reported position of the mobile station in real time without regard to a threshold value or loop removal.

The Examiner urges that the proposed combination of references will allegedly reduce necessary location updates, which in turn will reduce network signaling and increase network resources and efficiency. AA, page 2. Appellants traverses this assertion and believes the contrary is logically indicated.

Kallin achieves efficiencies by use of the granularity selector and a succession of pages as needed based upon the adaptively expanded page area based upon the real time last reported position of the mobile station. *Id.*, column 4, lines 10-35. Ho delays the update of the position of the mobile station until a threshold value is reached , and this works at cross purposes with Kallin. Whatever efficiencies Ho achieves using that method and system of paging would appear to eliminate the efficiencies of the adaptive paging scheme of Kallin based upon the added delay of Ho. Where a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, the proposed modification would not have been obvious. *See Tec Air Inc. v. Denso Mfg. Michigan Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999).

The Examiner goes on to state in the Advisory Action:

> With respect to the combination of Kallin and Ho, with Funato, Ho teaches that the cell IDS are removed from the history stack, but is silent to what happens to the removed cell IDS. Funato pertains to maintaining a current location table and a history location table. Funato teaches that when a mobile terminal moves from one paging area, information from a current location table is moved to a previous location table, thus broadly teaching maintenance of current information and previous information in two distinguished tables and moving the current information to a previous information table when an update occurs. Thus if the mobile terminal in the combination of Kallin and Ho moves the cell IDS recorded in the movement history stack when a location update occurs to another table or list, one of ordinary skill in the art would recognize that this information may at one time in the future be valuable or needed by the network to perform particular functions such as billing or movement tracking. Furthermore the saving of erased or deleted data in case of future need is readily known in the art.

*Id.*, page 2. Again, it appears the Examiner understands that Funato does not describe retaining the cell in which the MH last registered in the CLT as featured in the claim 1. Rather, the last

registered cell--the CLT of Funato--is moved to the PLT. As explained above, the Examiner's proposed combination of Kallin and Ho is improper. To further modify that improper combination only exacerbates the error in the Examiner's rejection and, again does not result in the subject matter of claim 1 as a whole.

Recognizing that Kallin, Ho and Funato do not teach or suggest the claim feature "receiving registration from the MS when a number of cells identified in a first list is equal to a predetermined limit and the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list," the Examiner makes two new entirely unsupported assertions to support this new theory:

- one of ordinary skill in the art would recognize that this information may at one time in the future be valuable or needed by the network to perform particular functions such as billing or movement tracking.

- saving of erased or deleted data in case of future need is readily known in the art..

Apart from the propriety of setting forth a new theory of the rejection in an Advisory Action, the Examiner relies upon no evidence in support of the assertion. The assertions are not supported by Kallin, Ho or Funato. The Examiner does not rely upon any evidence as to what is purportedly "readily known in the art." Thus, the Board should give no weight to these untimely, unsupported assertions. See Rohm and Haas Co. v. Brotech Corp., 127 F.3d 1089, 1092 (Fed. Cir. 1997) (nothing in the rules or in jurisprudence requires the fact finder to credit unsupported or conclusory assertions).

The Examiner also states in the Advisory Action:

> Applicant asserts that the combination of Kallin, Ho, and Funato does not teach the limitation that the MS moves cells identified in the first list, other than the cell in which the MS last registered, to a second list. The Examiner respectfully disagrees. With respect to Ho and Funato, the movement history stack of Ho renders the first list. When the movement threshold is reached, the current cell ID or cell in which the MS last registered is maintained. The cell IDS removed from the movement history stack, or the cells identified in the first list other than the cell the MS last registered, are then stored in another table or list as taught by Funato, thus teaching the required claim limitations.

This is another strained attempt to arrive at this claim feature. First, noticeably missing from this new theory is any mention of Kallin. Thus, regardless of how the Examiner wants to combine Ho and Funato, there is no reason to modify Kallin. The new theory as to how Ho and Kallin are combined to arrive at this claim feature lacks factual support in the references. As previously discussed, Ho compiles a location history of the mobile station at the mobile station and de-loops the history. A location update is performed when the threshold value is reached. Ho states that "all cell IDs are removed from the movement history register 404 except for the cell ID of the current cell." Id., column 7, lines10-19. Note that Ho states that the cell IDs are "removed," not moved to form a second list. Funato moves the CLT to the PLT and does not retain the current location. Id., specification [0088]. The examiner offers no explanation why it would have been obvious to combine Ho and Funato in this manner. The PLT to which the CLT is moved in Funato is part of Funato's complex paging system and method. The paging system and method of Ho do not need a list similar to the PLT of Funato since they function simply on knowledge of the last reported cell. Id., column 5, lines 53-61. Again, this late attempt to offer a new theory of the rejection is evidence the rejection is based upon impermissible hindsight.

Reversal of the rejection is requested.

**b. Separate argument for independent claim 7**

Claim 7 is directed to a computer-readable medium comprising instructions for causing a machine to perform operations for paging a target mobile station. The instructions comprise a set of instructions for receiving information destined for the target mobile station and a set of instructions for paging the target mobile station at a paging area that is centered at a cell in which the mobile station last registered. The paging area expands by a predefined number of cells around the cell. The instructions further comprise a set of instructions for receiving registration information from the mobile station when the number of cells identified in a first list is equal to a predetermined limit. The mobile station moves cells identified in the first list, other than the cell in which the mobile station is last registered, to a second list.

The Examiner's rejection of claim 7 is also in error. As developed above in regard to claim 1, viewing Kallin, Ho, and Funato together without knowledge of the present disclosure and claims as one must in making an obviousness determination, it is readily seen there is no reason to combine the references as proposed by the Examiner. The arguments set forth above in regard to claim 1 apply here. The only apparent basis for combining the prior art disclosures is the present Appellants' disclosure and claims. Thus, the Examiner's case of obviousness does not take into account the subject matter of claim7 as a whole and amounts to impermissible hindsight.

Reversal of the rejection is requested.

**c. Separate argument for independent claim 13**

Claim 13 is directed to an apparatus for paging a target mobile station. The apparatus comprises means for receiving information destined for the target mobile station and means for paging the target mobile station at a paging area that is centered at a cell in which the mobile station last registered. The paging area expands by a predefined number of cells around the cell. The apparatus further comprises means for receiving registration information from the mobile station when the number of cells identified in a first list is equal to a predetermined limit. The mobile station moves cells identified in the first list, other than the cell in which the mobile station is last registered, to a second list.

The Examiner's rejection of claim 13 is also in error. As developed above in regard to claim 1, viewing Kallin, Ho, and Funato together without knowledge of the present disclosure and claims as one must in making an obviousness determination, it is readily seen there is no reason to combine the references as proposed by the Examiner. The arguments set forth above in regard to claim 1 apply here. The only apparent basis for combining the prior art disclosures is the present Appellants' disclosure and claims. Thus, the Examiner's case of obviousness does not take into account the subject matter of claim7 as a whole and amounts to impermissible hindsight.

Reversal of the rejection is requested.

**d. Separate argument for independent claim 19**

Claim 19 is directed to a base station controller for paging a target mobile station. The base station controller comprises a receiver operable to receive information from a target mobile station and a transmitter operable to transmit information from the target mobile station. The base station controller further comprises a processor. The processor is operable to receive

information for the target mobile station and page the target mobile station at a paging area that is centered at a cell in which the mobile station last registered. The paging area expands by a predefined number of cells around the cell. The processor is further operable to receive registration information from the mobile station when the number of cells identified in a first list is equal to a predetermined limit. The mobile station moves cells identified in the first list, other than the cell in which the mobile station is last registered, to a second list.

The Examiner's rejection of claim 19 is also in error. As developed above in regard to claim 1, viewing Kallin, Ho, and Funato together without knowledge of the present disclosure and claims as one must in making an obviousness determination, it is readily seen there is no reason to combine the references as proposed by the Examiner. The arguments set forth above in regard to claim 1 apply here. The only apparent basis for combining the prior art disclosures is the present Appellants' disclosure and claims. Thus, the Examiner's case of obviousness does not take into account the subject matter of claim7 as a whole and amounts to impermissible hindsight.

Reversal of the rejection is requested.

**iv. Claims 3-4, 6, 8-10, , 14-16, 23, and-24**

For the purposes of this appeal, these dependent claims will not be separately argued. They are patentable for the reasons set forth above for the independent claims from which they depend.

Reversal of the rejection is requested.

Rejection of claims 5, 6, 11, 12, 17, 18, 23, and 24 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Kallin, Ho, Funato and further in view of Papadimitriou

Papadimitriou is relied upon for its purported teaching of a so-called global paging area. FR, pages 5-6. Papadimitriou generally describes a global paging system for mobile stations in a wireless network (Abstract), but does not provide either the feature of the a mobile station registration when a number of cells in a first list is equal to a predetermined number and movement of the cells identified in the first list, other than a cell in which the MS last registered, to a second list, or provide a motivation to combine Kallin, Ho, and Funato. Thus, Papadimitriou does not rectify the deficiencies of Kallin, Ho and Funato discussed above in regard in support of the patentability of the independent claims. Thus, for the reasons set forth above in regard to the independent claims, these dependent claims are patentable.

Reversal of the rejection is requested.

## V. Conclusion

For the foregoing reasons, it is respectfully submitted that in each of the rejections discussed herein under 35 U.S.C. § 103(a), the Examiner has failed to show that the proffered references teach or suggest each and every element of the claimed invention and has impermissibly relied upon hindsight in constructing the rejection. Accordingly, reversal of all outstanding rejections is earnestly solicited.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

Dated: October 1, 2008

By: _____
Raphael Freiwirth, Reg. No. 52,918
Telephone: 858.651.0777

QUALCOMM Incorporated
Attn: Patent Department
5775 Morehouse Drive
San Diego, California 92121-1714
Telephone: (858) 658-5787
Facsimile: (858) 658-2502

(8) CLAIMS APPENDIX

1. A method for paging a target mobile station (MS), the method comprising:

receiving information destined for the target MS;

paging the target MS at a paging area that is centered at a cell, in which the target MS last registered, and expands by a predefined number of cells around the cell; and

receiving registration from the MS when a number of cells identified in a first list is equal to a predetermined limit and the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list.

2. The method of claim 1, further including sending the information to the target MS, if the target MS is located.

3. The method of claim 2, further including determining a neighboring base station controller (BSC) that can locate the target MS, if the target MS is not located.

4. The method of claim 3, further including sending the information to the neighboring BSC that locates the target MS for delivery to the target MS.

5. The method of claim 3, further including determining whether a mobile station controller (MSC) can locate the target MS, if no BSC connected to the MSC could locate the target MS.

6. The method of claim 5, further including sending the information to the MSC for delivery to the target MS, if the MSC locates the target MS.

7. A computer-readable medium comprising at least one instruction, which, when executed by a machine, cause the machine to perform operations for paging a target mobile station (MS), the instruction comprising:

a set of the instructions to receive information destined for the target MS;

a set of the instructions to page the target MS at a paging area that is centered at a cell, in which the target MS last registered, and expands by a predefined number of cells around the cell; and

a set of instructions to receive registration from the MS when a number of cells identified in a first list is equal to a predetermined limit and the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list.

8. The computer-readable medium of claim 7, further comprising a set of instructions to send the information to the target MS, if the target MS is located.

9. The computer-readable medium of claim 8, further comprising a set of instructions to determine a neighboring base station controller (BSC) that can locate the target MS, if the target MS is not located.

10. The computer-readable medium of claim 9, further comprising a set of instructions to send the information to the neighboring BSC that locates the target MS for delivery to the target MS.

11. The computer-readable medium of claim 9, further comprising a set of instructions to determine whether a mobile station controller (MSC) can locate the target MS, if no BSC connected to the MSC could locate the target MS.

12. The computer-readable medium of claim 11, further comprising a set of instructions to send the information to the MSC for delivery to the target MS, if the MSC locates the target MS.

13. An apparatus for paging a target mobile station (MS), comprising:

means for receiving information destined for the target MS;

means for paging the target MS at a paging area that is centered at a cell, in which the target MS last registered, and expands by a predefined number of cells around the cell; and

means for receiving registration from the MS when a number of cells identified in a first list is equal to a predetermined limit and the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list.

14. The apparatus of claim 13, further including means for sending the information to the target MS, if the target MS is located.

15. The apparatus of claim 14, further including means for determining a neighboring base station controller (BSC) that can locate the target MS, if the target MS is not located.

16. The apparatus of claim 15, further including means for sending the information to the neighboring BSC that locates the target MS for delivery to the target MS.

17. The apparatus of claim 15, further including means for determining whether a mobile station controller (MSC) can locate the target MS, if no BSC connected to the MSC could locate the target MS.

18. The apparatus of claim 17, further including means for sending the information to the MSC for delivery to the target MS, if the MSC locates the target MS.

19. A base station controller (BSC) for paging a target mobile station (MS), comprising:

a receiver operable to receive information from a target MS;

a transmitter operable to transmit information to the target MS; and

a processor operable to:

receive information destined for the target MS;

page the target MS at a paging area that is centered at a cell, in which the target MS last registered, and expands by a predefined number of cells around the cell; and

receive registration from the MS when a number of cells identified in a first list is equal to a predetermined limit and the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list.

20. The base station controller of claim 19, further operable to send information to the BSC for delivery to the target MS, if the BSC locates the target MS.

21. The base station controller of claim 20, further operable to determine a neighboring BSC that can locate the target MS, if the BSC could not locate the target MS.

22. The base station controller of claim 21, further operable to send information to the neighboring BSC that locates the target MS for delivery to the target MS.

23. The base station controller of claim 21, further operable to determine whether a mobile station controller (MSC) can locate the target MS, if no BSC connected to the MSC could locate the target MS.

24. The base station controller of claim 23, further operable to send information to the MSC for delivery to the target MS, if the MSC locates the target MS.

(9) EVIDENCE APPENDIX

None.

(10) RELATED PROCEEDINGS APPENDIX

None